

11

Recovery and purity of MAb monomer from the cation-exchange resin was comparable to that of the anion-exchange resin. FIGS. 5A–B show cation-exchange (RESOURCE™ S) chromatograms in the separation of anti-IgE MAb monomers from dimers and multimers at pH 6 (phosphate buffer). Separations of BSA on cation-exchange resins could be performed at pH 4.6 and 4.3, 4.3 being somewhat better. FIGS. 6A–B show cation-exchange (RESOURCE™ S) chromatograms in the separation of BSA monomers from dimers and multimers at pH 4.3 (acetate buffer).

In summary, mixtures of polypeptide mers were subjected to cation- or anion-exchange chromatography using a variety of resins and under a variety of pH and elution salt conditions, and successful separation was achieved. Based on results from four proteins with basic and acidic isoelectric points (two IgG, MAbs, IgE and serum albumin), the method demonstrates general applicability to separation of polypeptide monomers from their dimers and multimers.

What is claimed is:

1. A method for purifying polypeptide monomers from a mixture consisting essentially of said polypeptide monomers, and dimers or multimers of said polypeptide monomers or both dimers and multimers of said polypeptide monomers, wherein the method consists essentially of applying the mixture to a cation-exchange or anion-exchange chromatography resin in a buffer, wherein if the resin is cation-exchange, the pH of the buffer is about 4–7, and wherein if the resin is anion-exchange, the pH of the buffer is about 6–9, and eluting the mixture at a gradient of about 0–1 M of an elution salt, wherein the monomer is purified from the dimers or multimers or both present in the

12

mixture, and wherein the purified monomer has a purity of greater than 99.5% and the monomer yield is greater than 90%.

2. The method of claim 1 wherein the polypeptide is a serum albumin.

3. The method of claim 1 wherein the polypeptide is anti-IgE, anti-IgG, anti-Her-2, anti-CD11a, anti-CD18, anti-CD20, anti-VEGF, or IgE.

4. The method of claim 2 wherein the serum albumin is bovine serum albumin.

5. The method of claim 1 wherein the ion-exchange resin is a cation-exchange resin.

6. The method of claim 1 wherein the ion-exchange resin is an anion-exchange resin.

7. The method of claim 1 wherein the gradient is linear.

8. The method of claim 1 wherein the gradient is stepwise.

9. The method of claim 1 wherein the elution salt is a sodium salt.

10. The method of claim 9 wherein the elution salt is sodium chloride.

11. The method of claim 1 wherein the gradient is from 0 to 500 mM elution salt.

12. The method of claim 1 wherein the gradient is from 50 to 200 mM elution salt.

13. The method of claim 1 wherein the gradient is from 0 to 50 mM elution salt.

14. The method or claim 1 wherein the polypeptide is an antibody.

15. The method of claim 1 wherein the polypeptide is a monoclonal antibody.

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